LETTERS TO THE EDITOR

Regarding "Heparin-bonded Dacron or polytetrafluoroethylene for femoro-popliteal bypass grafting: A multicenter trial"

We have read with interest the article by Devine and McCollum (J Vasc Surg 2001;33:533-9) on femoropopliteal arterial reconstructions comparing heparin-bonded Dacron grafts versus non–heparin-treated PTFE control grafts. The title of this important study suggests that the improved outcome demonstrated for the heparin-bonded Dacron grafts is related somehow to the antithrombotic properties of the bonded heparin that is exposed on the inner graft surface to the circulating blood stream. This assumption is well in line with previous work demonstrating improved thrombo-resistance for heparin surface coated devices exposed to the blood stream under various conditions.[1-3]

Unfortunately, clot production has been demonstrated clinically for patients perfused with heparin-coated devices, after infusion of protamine during the perfusion period.[4] It was also demonstrated for the experimental set-up that heparin-coated devices exposed to circulating protamine produced more clots than both uncoated controls perfused sequentially under the same conditions and heparin surface coated devices perfused without systemic heparinization.[5] Hence, it has to be accepted that circulating protamine neutralizes the antithrombotic properties of heparin surface treatments.

Devine and McCollum have not reported the detailed periprocedural anticoagulation regimens used for the study group receiving heparin-bonded grafts and the control patients included in their report (only aspirin 300 mg/d is mentioned). However, if some systemic heparin was given before cross-clamping, and eventually protamine was used at the end of the procedure, it can be expected, based on the experiences mentioned above, that the heparin on the inner graft surface, which was exposed to circulating protamine, was neutralized, and therefore the antithrombotic properties of the inner graft surface were lost. Hence, under such circumstances it seems to be unrealistic to attribute the superior patency rates of the study group to bonded heparin.

On the other hand, if the authors have avoided protamine in the patients of the study group, this should be clearly stated, and a caveat mentioning the downsides of protamine application in the presence of heparin-bonded synthetic grafts seems to be appropriate for the readers of the Journal.

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24/41/120032
doi:10.1067/mva.2002.120032

Reply

Dr Von Segesser and colleagues read more into our title than was intended. This was a clinical trial comparing two types of grafts. Our discussion points out that we have no convincing evidence to attribute the improved results with heparin-bonded Dacron to the heparin bonding. Rather, we suggest that the results with PTFE are poor, particularly with respect to subsequent amputation.

It is normal practice in the UK to give heparin systemically prior to applying cross clamps. However, some surgeons give regional heparin only and heparin saline was infused into the distal tree after making the arteriotomy in 16 of the 209 reconstructions. It is not normal practice in the UK to give protamine and none of our patients received protamine.

We agree that it would be illogical to give protamine to any patient in whom a heparin bonded device was being implanted. We know that protamine reversal of heparin may be disastrous in carotid surgery (Fearn SJ, Parry AD, Picton AJ, Mortimer AJ, McCollum CN. Eur J Vasc Endovasc Surg 1997;13:394-7), but I suspect there is little evidence of an effect on distal arterial reconstruction.

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24/41/120031
doi:10.1037/mva.2002.120031

Regarding "The 50th anniversary of abdominal aortic reconstruction"

Landmark events in medicine are usually grounded in the thought and research of many people. Without taking credit from Dubost, Oudot, and their colleagues for their audacity and ingenuity in performing the first aneurysm repair, one should also give credit to the mentor who likely guided them. Given the state of surgical technology and anesthesia in 1950, it took incredible courage to apply what was only a minimal laboratory experience with aortic homografts to a new clinical application. Was there someone who provided inspiration to perform that surgery?

That guide was likely Jean Patel, MD, Chef de Service of the Hotel-Dieu, Paris. Patel is credited for his advice by Dubost in the discussion section of the first aneurysm report. He was teacher to a generation of surgical leaders in France. Unfortunately, Patel has remained virtually unknown outside of the French-speaking world.

This remarkable surgeon lived from 1900 to 1968.[1,2] Although his abiding interest later in life was surgery of the spleen, he published widely (some 330 attributions overall), including articles on traumatology, hepatectomy, and intestinal problems. Relating to cardiac problems, he published reports in the 1940s on surgery for constrictive pericarditis, aortopulmonary transposition, aortic coarctation, and sympathectomy for hypertension.

In the laboratory, Patel began studies of peripheral arterial emboli in 1932. He and his colleagues developed an experience with aortoiliac thrombectomy and embolectomy and used a retroperitoneal approach.[3] This approach was logically extended by Dubost in his operation. Patel was directly involved in the concept of homografting. In 1951, with Jean Natali, he performed a series of 10 grafts in a canine model, and a report later documented the status of a graft with 10-year follow-up.[4] In the 1960s, Patel went on to publish a series on infrarenal aneurysm repairs,[5] a study on renal artery aneurysms,[6] and a study on the role of endoaneurysmorrhaphy for peripheral aneurysms.[7] Other significant papers published by Patel included experiences in the management of diabetic peripheral vascular disease[8] and the use of streptokinase for arterial occlusions.[9] History has shown that a group of French surgeons founded what must be regarded as a school of vascular surgery that was at the absolute forefront of development of this specialty from the 1930s until the late 1950s, and Patel was a leader in that group.

Despite his ingenuity in the development of surgery for aortic aneurysms, Jean Patel's name does not appear in the earliest bibliographies from the 1950s of reports in English relating to aortic surgery. Although Natali cited work with Patel in his memoir of Oudot, he never discussed the role Patel had as chief during those early days of vascular reconstruction.[10] That anonymity continues to the present. Patel was, of course, well known in Europe as one of the most distinguished surgeons of his time. In a world where travel was slower and English yet to be acknowledged the lingua franca of medicine, Patel remained, in a real sense, isolated from a large portion of the world medical community. He spoke virtually no English, and his works were not translated from French. He disliked travel in general and had an aversion to airplanes. He formed some close friendships with some American surgeons during World War II, but he visited the United States only once, when his son was a Fulbright Scholar.

At the 50th anniversary of surgery for aortic aneurysms, Jean Patel deserves recognition as a guide who inspired the pioneering use of aortic homografts and retroperitoneal exposure in the first aortic reconstructions. He is truly an unsung hero who helped found the specialty of vascular surgery.

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This account is based in part on correspondence with Jean Patel's sons, Dr Jean-Claude Patel and Dr Alain Patel, as well as Dr Georges Arnulf and Dr Jean Natali, all of whom kindly shared material published at the death of Dr Jean Patel. Dr Allan Callow also provided important insights about the importance of Dr Patel.

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24/41/119235
doi:10.1067/mva.2002.119235

Regarding "The influence of surgical specialty training on the outcomes of elective abdominal aortic aneurysm surgery"

I appreciated the article by Drs Tu, Austin, and Johnston (J Vasc Surg 2001;33:447-52) and Dr Cronenwett's related commentary (654-6). Dr Cronenwett refers to "low volume surgeons" and "certified vascular surgeons" but does not speak to the realm in between—the high-volume, noncertified vascular surgeon.

It has been suggested that specialty training in vascular procedures leads to better patient outcomes.[1,2] Actual procedure volume after training has not particularly been shown to correlate.[3,4] Beneath the surface of the controversy regarding an independent Board of Vascular Surgery is another, perhaps more important, nascent dispute, that being the ideal that Board Certification equals competence.

At the Lehigh Valley Hospital in Allentown, Pa, six surgeons whose practices are limited to vascular surgery perform the bulk of vascular procedures (>90%). Four of the six are in one practice group, and the other two are in a separate group. All completed vascular fellowships. One member of each group does not have board certification in vascular surgery.

Inspired by Dr Norman Hertzer, the Lehigh Valley Hospital in Allentown, Pa, has had a vascular registry since 1991. Every patient having a carotid, aortic, or lower-extremity bypass procedure is entered into the registry in order to follow outcomes. Every surgeon performing those operations is examined for several criteria. For example, in carotid surgery, surgeon-specific morbidity and mortality rates are easily identified.

A review of elective aortic surgery reveals a mortality rate for the two noncertified vascular surgeons of 1.6% (4/247) and a rate of 1.8% (8/435) for the four certified vascular surgeons. For ruptured abdominal aneurysms, the corresponding rates are 30% (7/23) and 32% (15/47), respectively. Carotid morbidity and mortality rates are 1.2% (8/655) and 1.4% (18/1275), respectively. Severity of illness scores are equal for each group. Age and gender bias also did not exist between the groups. The American College of Surgeons has taken the initiative to describe the competent physician and, of course, certification is a major facet of that recognition.[5]